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In Cooperation
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Drying of Wood

List of Publications

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Title	:	Author	:	Publication and date
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PHYSICAL PROPERTIES OF WOOD RELATED TO DRYING

A. Permeability, Diffusion, and Drying Rate

Drying rate of northern red oak:	Tschernitz, J. L., &	:	Wood Sci. 11(4):
lumber as an analytical func-	Simpson, W. T.	:	202-208. 1979.
tion of temperature, relative	:	:	:
humidity, and thickness.	:	:	:

Effect of steaming on the	Simpson, W. T.	:	Wood Sci 7(3):247-
drying rate of several species	:	:	255. 1975.
of wood.	:	:	:

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PHYSICAL PROPERTIES OF WOOD RELATED TO DRYING--Cont.

A. Permeability, Diffusion, and Drying Rate--Cont.

Relationship between perme-	:	Comstock, G. L.	:	Forest Prod. J.
ability of green and dry	:		:	18(8):20-23.
eastern hemlock.	:		:	Aug. 1968.
Theoretical consideration in	:	Hann, R. A.	:	For. Prod. J. 16(4):
the drying of wood at pressures:	:		:	25-32. 1966.
above atmospheric.	:		:	
Longitudinal permeability of	:	Comstock, G. L.	:	Forest Prod. J.
green eastern hemlock.	:		:	15(10):441-449.
	:		:	Oct. 1965.

B. Shrinkage and Swelling

Maximum initial moisture	:	Wengert, E. M.	:	Forest Prod. J.
contents for kiln-drying 4/4	:		:	24(8):54-56.
hardwoods at high temperatures..	:		:	Aug. 1974.
Relation of comparative	:	Simpson, W. T.	:	Wood and Fiber
diffusion rates of oak ray	:		:	5(1):34-40. 1973.
and surrounding tissue to	:		:	
check formation.	:		:	
Longitudinal shrinkage in	:	Hann, R. A.	:	U.S. Forest Serv.
seven species of wood.	:		:	Res. Note FPL-0203.
	:		:	1969.
Dimensional changes in kiln-	:	Comstock, G. L.	:	U.S. Forest Serv.
dried softwood lumber after	:		:	Res. Note FPL-0144.
surfacing and during storage.	:		:	1966.
Shrinkage of coast-type	:	Comstock, G. L.	:	U.S. Forest Serv.
Douglas-fir and old-growth	:		:	Res. Pap. FPL 30.
redwood boards.	:		:	1965.

C. Moisture Content

Electric moisture meters for	:	James, W. L.	:	USDA For. Serv.
wood.	:		:	Gen. Tech. Rep.
	:		:	FPL 6. 1975.

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PHYSICAL PROPERTIES OF WOOD RELATED TO DRYING--Cont.

C. Moisture Content--Cont.

Equilibrium moisture content prediction for wood.	:	Simpson, W. T.	:	Forest Prod. J.
	:		:	21(5):48-49.
	:		:	May 1971.
Effects of wood preservatives on electrical moisture meter readings.	:	James, W. L.	:	U.S. Forest Serv.
	:		:	Res. Note FPL-0106.
	:		:	1966.
Kiln samples (ch. 6, Dry Kiln Operator's Manual).	:		:	(See Kiln Drying of Lumber.)

D. Stresses

Use of acoustic emissions to identify high levels of stress during oak lumber drying.	:	Skaar, C., Simpson, W. T., & Honeycutt, R. M.	:	For. Prod. J.
	:		:	30(2):21-22. 1980.
	:		:	
Could S-D-R be the answer to the aspen oversupply problem?	:	Maeglin, R. R.	:	Northern Logger and Timber Process.,
	:		:	pp. 24-25. July
	:		:	1979.
A "pinned" sticker to reduce crook in kiln-drying lumber.	:	Wengert, E. M., and Baltes, R. C.	:	Forest Prod. J.
	:		:	24(8):23-24.
	:		:	Aug. 1974.
Effect of restrained swelling on wood moisture content.	:	Simpson, W. T., & Skaar, C.	:	U.S. For. Serv.
	:		:	Res. Note FPL-0203.
	:		:	1969.
Honeycomb and ring failure in bacterially infected red oak lumber after kiln drying.	:	Ward, J. C., Hann, R. A., Baltes, R. C., and Bulgrin, E. H.	:	U.S. Forest Serv.
	:		:	Res. Pap. FPL 165.
	:		:	1972.
	:		:	
Seasoning factors for modulus of elasticity and modulus of rupture.	:	Gerhards, C. C.	:	Forest Prod. J.
	:		:	18(11):27-35.
	:		:	Nov. 1968.
Transverse strain during drying of 2-inch ponderosa pine.	:	McMillen, J. M.	:	U.S. Forest Serv.
	:		:	Res. Pap. FPL 83.
	:		:	1968.

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PHYSICAL PROPERTIES OF WOOD RELATED TO DRYING--Cont.

E. Other Problems Related to Drying

Drying procedures for bacterially infected northern red oak lumber.	:	McMillen, J. M., Ward, J. C., and Chern, J.	:	USDA For. Serv. Res. Pap. FPL 345. 1979.
Drying rate of northern red oak lumber as an analytical function of temperature, relative humidity, and thickness.	:	Tschernitz, J. L., and Simpson, W. T.	:	Wood Sci. 11(4):202-208. 1979.
California black oak drying problems and the bacterial factor.	:	Ward, J. C., and Shedd, D.	:	USDA For. Serv. Res. Pap. FPL 344. 1979.
Drying eastern hardwood lumber.	:	McMillen, J. M., and Wengert, E. M.	:	USDA For. Serv. Agric. Handb. 528. 1978.
Does thickness variation in sawing affect kiln drying.	:	Simpson, W. T., & Tschernitz, J. L.	:	So. Lbrmn. 15-17. July 1, 1978.
Kiln drying lumber from American elm trees killed by Dutch Elm disease.	:	Boone, R. S., & Ward, J. C.	:	For. Prod. J. 27(5):48-50. 1977.
Control of reddish-brown coloration in drying maple sapwood.	:	McMillen, J. M.	:	U.S. For. Serv. Res. Note FPL-0231. 1976.
Physical characteristics of seasoning discolorations in sugar maple sapwood.	:	McMillen, J. M.	:	U.S. For. Serv. Res. Pap. FPL 248. 1975.
Gray-brown chemical stain in southern hardwoods.	:	Bois, P. J.	:	U.S. Forest Serv. FPU Tech. Rep. No. 1. 1970.
Dip treatment in polyethylene glycol not effective in preventing surface checking.	:	Rietz, R. C.	:	U.S. Forest Serv. Res. Note FPL-0204. 1969.

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PHYSICAL PROPERTIES OF WOOD RELATED TO DRYING--Cont.

E. Other Problems Related to Drying--Cont.

Prevention of pinkish-brown discoloration in drying maple sapwood.	:	McMillen, J. M.	:	U.S. Forest Serv. Res. Note FPL-0193. 1968.
Standard terms for describing wood.	:		:	U.S. Forest Serv. Res. Note FPL-0171. 1967.
Comparative strength of air-dried and kiln-dried wood.	:		:	U.S. Forest Serv. Res. Note FPL-055. 1964.
Characteristics of Alaska wood.	:		:	U.S. Forest Serv. Res. Pap. FPL 1. 1964.

VARIOUS METHODS OF DRYING LUMBER

Air Drying

Drying eastern hardwood lumber.	:	McMillen, J. M., and Wengert, E. M.	:	U.S. Dep. of Agric. Handb. No. 528, Sept. 1978. Copies may be purchased from the Superintendent of Documents, GPO, Washington, DC 20402. Price: \$2.75.
A calendar for air-drying lumber in the upper Midwest.	:	Rietz, R. C.	:	U.S. For. Serv. Res. Note FPL-0224. 1972.
Air drying of lumber: A guide to industry practices.	:	Rietz, R. C., and Page, H.	:	U.S. Dep. of Agric. Handb. No. 402. 110 p. 1971. Copies may be purchased from the Superintendent of Documents, GPO, Washington, DC 20402. Price: \$1.00.

Title	:	Author	:	Publication and date

VARIOUS METHODS OF DRYING LUMBER--Cont.

Air Drying--Cont.

A method of seasoning small quantities of lumber.	:	Rasmussen, E. F.	:	U.S. Forest Serv.
	:		:	Res. Note FPL-089.
	:		:	1965.

Kiln Drying

Steaming northern red oak to reduce kiln drying time.	:	Simpson, W. T.	:	For. Prod. J.
	:		:	26(10):35-36.
	:		:	1976.
Kiln drying sinker heartwood from young-growth Western hemlock: Preliminary evaluation.	:	Ward, J. C., and Kozlik, C. J.	:	Proc. Western Dry Kiln Clubs 26th Annual Meeting, May 1-2, 1975.
	:		:	Oregon State University, Corvallis, OR
	:		:	
How to reduce energy consumption in kiln-drying 4/4 hardwoods at high temperatures.	:	Wengert, E. M.	:	U.S. Forest Serv.
	:		:	Res. Note FPL-0228.
	:		:	1974.
Kiln drying of selected Colombian woods.	:	McMillen, J. M., and Boone, R. S.	:	Forest Prod. J.
	:		:	24(4):31-36.
	:		:	Apr. 1974.
Schedules for foreign woods.	:	McMillen, J. M., and Bois, P. J.	:	U.S. Forest Serv.
	:		:	FPU Tech. Rep.
	:		:	No. 2. Mar. 1972.
Review of high-temperature kiln-drying of hardwoods.	:	Wengert, E. M.	:	So. Lbrmn. 17-19.
	:		:	Sept. 15, 1972.
New kiln schedule for pre-surfaced oak lumber.	:	McMillen, J. M., and Baltes, R. C.	:	Forest Prod. J.
	:		:	22(5):19-26.
	:		:	May 1972.
Accelerated oak drying by presurfacing, accelerated schedules, and kiln automation.	:	Wengert, E. M., and Baltes, R. C.	:	U.S. Forest Serv.
	:		:	Res. Note FPL-0214.
	:		:	1971.

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VARIOUS METHODS OF DRYING LUMBER--Cont.

Kiln Drying--Cont.

Dry kiln automation.	: Wengert, E. M.	: So. Lbrmn.
	:	: Dec. 15, 1971.
Partial list of lumber dry	:	: FPL Rep. 76-021.
kiln manufacturers in the	:	: 1976.
United States.	:	:
Accelerating the kiln drying	: Rietz, R. C.	: So. Lbrmn. 221(2741):
of hardwoods.	:	: 19-22, 26, 27, 30.
	:	: July 1, 1970.
Properties of imported	: Kukachka, B. F.	: U.S. Forest Serv.
tropical woods. (Kiln	:	: Res. Pap. FPL 125.
schedules included.)	:	: 1970.
Computer programmed kiln	: Wengert, E. M.	: Wood & Wood Products.
controls expected to save	:	: Mar. 1970.
time and money.		
Accelerated kiln drying of	: McMillen, J. M.	: U.S. Forest Serv.
presurfaced 1-inch northern	:	: Res. Pap. FPL 122.
red oak.	:	: 1969.
Seasoning and handling of	: McMillen, J. M.	: U.S. Forest Serv.
ramin.	:	: Res. Note FPL-0172.
	:	: 1967.
Operation and maintenance of	:	: U.S. Forest Serv.
lumber dry kilns.	:	: Res. Note FPL-0118.
	:	: 1966.
News and views of this kiln	:	: U.S. Forest Serv.
drying business: Warp	:	: Res. Note FPL-0108.
reduction.	:	: 1965.
Dry kiln operator's manual.	: Rasmussen, E. F.	: U.S. Dep. of Agric.
	:	: Handb. No. 188.
	:	: 1961. Copies may
	:	: be purchased from
	:	: the Superintendent
	:	: of Documents, GPO,
	:	: Washington, DC 20402.
	:	: Price: \$6.00.

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VARIOUS METHODS OF DRYING LUMBER--Cont.

Kiln Drying--Cont.

Separates from Dry Kiln	:		:	U.S. Dep. of Agric.
Operator's Manual.	:		:	Handb. No. 188.
<u>Chapter</u>	:		:	1961. <u>Single</u> copies
Introduction	:		:	of the individual
	:		:	chapters are avail-
1. Properties of wood	:		:	able free of charge
related to drying.	:		:	from the Forest
2. Kiln types and features.	:		:	Products Laboratory.
3. Auxiliary kiln equipment.	:		:	
4. Inspection and main-	:		:	
tenance of dry kilns.	:		:	
5. Stacking lumber and other	:		:	
items for kiln drying.	:		:	
6. Kiln samples.	:		:	
7. Loading the dry kiln.	:		:	
8. Kiln schedules and	:		:	
drying time.	:		:	
9. Drying defects.	:		:	
10. Operating a dry kiln.	:		:	
11. Storage of wood.	:		:	

Special Drying Methods

High temperature drying of 7/4	:	Boone, R. S., &	:	U.S. For. Serv.
yellow poplar flitches for SDR	:	Maeglin, R. R.	:	Res. Pap. FPL
studs.	:		:	365. 1980.
Effect of high-temperature	:	Gerhards, C. C.	:	For. Prod. J.
drying on tensile strength of	:		:	29(3):39-46. 1979.
Douglas-fir 2 by 4's.	:		:	
Solar-heated, forced-air,	:	Tschernitz, J. L., and	:	Solar Energy 22:
lumber dryer for tropical	:	Simpson, W. T.	:	563-566. 1979.
latitudes.	:		:	

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VARIOUS METHODS OF DRYING LUMBER--Cont.

Special Drying Methods--Cont.

High-temperature drying of hardwoods: A progress report on current research at FPL.	: Boone, R. S.	: From Proc. of Symp. : on High-Temp. : Drying of Hardwoods, : New Albany, Ind., : p. 25-40. March : 22, 1979.
An introduction of high- temperature drying: Past research efforts and defini- tions of terms and procedures.	: Boone, R. S.	: From Proc. of Symp. : on High-Temp. : Drying of Hardwoods, : New Albany, Ind., : p. 1-9. March : 22, 1979.
High-temperature drying of Douglas-fir lumber.	: Sumi, H., and : McMillen, J.	: For. Prod. J. : 29(1):25-33. 1978.
Constructing and operating a small solar-heated lumber dryer.	: Bois, P. J.	: U.S. Forest Serv. : FPU Tech. Rep. : No. 7. Jan. 1977.
Effect of steaming on the drying rate of several species of wood.	: Simpson, W. T.	: Wood Science 7(3): : 247-255. 1975.
Salvaging flooded lumber.	:	: U.S. Forest Serv. : FPU Tech. Rep. : No. 5. Apr. 1973.
A checklist for drying small amounts of lumber.	: Bois, P. J., and : Wengert, E. M.	: U.S. Forest Serv. : FPU Tech. Rep. : No. 6. July 1973.
Enzyme mixture improves creosote treatment of kiln-dried Rocky Mountain Douglas-fir.	: Tschernitz, J. L.	: Forest Prod. J. : 23(3):30-38. : Mar. 1973.
Storage of lumber.	: Rietz, R.	: USDA For. Serv. : Agric. Handb. No. : 531. 1978.

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VARIOUS METHODS OF DRYING LUMBER--Cont.

Special Drying Methods--Cont.

Improvements in solar dry kiln design.	:	Wengert, E. M.	:	U.S. For. Serv. Res. Note FPL-0212. 1971.
Veneer cutting and drying properties:	:		:	
Western larch.	:		:	U.S. Forest Serv. Res. Note FPL-0163. 1967.
Tanoak.	:		:	U.S. Forest Serv. Res. Note FPL-0164. 1967.
Pacific madrone.	:		:	U.S. Forest Serv. Res. Note FPL-094. 1965.
Water oak.	:		:	U.S. Forest Serv. Res. Note FPL-0105. 1965.
Cottonwood.	:		:	U.S. Forest Serv. Res. Note FPL-044. 1964.
Tupelo.	:		:	U.S. Forest Serv. Res. Note FPL-017. 1963.

MOISTURE CONTENT AND TEMPERATURE CONTROL DURING FABRICATION AND USE

Electric moisture meters for wood.	:	James, W. L.	:	U.S. Forest Serv. Gen. Tech. Rep. FPL 6. 1975.
Maintaining moisture content conditions during lumber storage.	:	Bois, P. J.	:	U.S. Forest Serv. FPU Tech. Rep. No. 3. 1972.

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MOISTURE CONTENT AND TEMPERATURE CONTROL
DURING FABRICATION AND USE

Equilibrium moisture content prediction for wood.	:	Simpson, W. T.	:	Forest Prod. J. 21(5):48. May 1971.
Moisture content of laminated timbers.	:	Hann, R. A., Oviatt, A. E., Markstrom, D. M., and Duff, J. E.	:	U.S. Forest Serv. Res. Pap. FPL 149. 1970.
An analog computer for predicting surface temperature of wood.	:	Wengert, E. M.	:	U.S. Forest Serv. Res. Note FPL-0171. Aug. 1967.
Theoretical considerations in the drying of wood at pressures above atmospheric.	:	Hann, R. A.	:	Forest Prod. J. 16(4):25-32. Apr. 1966.

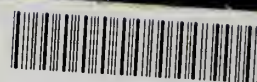
RELATED PUBLICATIONS

List of manufacturers and dealers for log and lumber end coatings that reduce checking and splitting.	:		:	FPL Rep. 80-017. 1980.
Overseas measures to improve initial seasoning and handling.	:	McMillen, J. M.	:	Import/Export Wood Purchasing News, Vol. 4. No. 4. June/July 1978.
How PEG helps the hobbyist who works with wood.	:	Mitchell, H. L.	:	Unnumbered report. Copies may be purchased from the Superintendent of Documents, GPO, Washington, DC 20402. Price: \$1.05.





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